

(12) **United States Patent**  
**Hoellwarth**

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(54) **HEAD-MOUNTED DISPLAY APPARATUS  
FOR RETAINING A PORTABLE  
ELECTRONIC DEVICE WITH DISPLAY**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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(58) **Field of Classification Search**

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(57) **ABSTRACT**

Head-mounted display systems and methods of operation that allow users to couple and decouple a portable electronic device such as a handheld portable electronic device with a separate head-mounted device (e.g., temporarily integrates the separate devices into a single unit) are disclosed. The portable electronic may be physically coupled to the head-mounted device such that the portable electronic device can be worn on the user's head. The portable electronic device may be operatively coupled to the head-mounted device such that the portable electronic device and head mounted device can communicate and operate with one another. Each device may be allowed to extend its features and/or services to the other device for the purpose of enhancing, increasing and/or eliminating redundant functions between the head-mounted device and the portable electronic device.

**24 Claims, 25 Drawing Sheets**

